

# Package ‘euclid.dijkstras’

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**Type** Package

**Title** Implements Euclid's and Dijkstra's Algorithms

**Version** 1.0

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**Description** There are two functions in the package:  
one implements Euclid's algorithm to find the greatest common divisor  
of two numbers, and the other implements Dijkstra's algorithm to compute  
the shortest distance/path from one node to another in a connected graph

**License** GNU

**RoxygenNote** 7.1.1

**LazyData** true

**Encoding** UTF-8

**Depends** R (>= 2.10)

**Suggests** testthat

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dijkstra	<i>Distance Computation Algorithm</i>
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## Description

Given a connected graph and starting node, find the shortest distance from the starting node to every other node in the graph using Dijkstra's algorithm

## Usage

```
dijkstra(graph, init_node)
```

## Arguments

graph	A dataframe with three numeric columns viz. "v1", "v2", and "w", representing each node, its adjacent node, and the distance between them, respectively
init_node	The starting node

## Value

Shortest distance from init\_node to all other nodes in the graph.

## References

[Dijkstra's Algorithm](#)

[Wiki page on what a graph is and more](#)

## Examples

```
wiki_graph <- data.frame(v1=c(1,1,1,2,2,2,3,3,3,3,4,4,4,5,5,6,6,6),v2=c(2,3,6,1,3,4,1,2,4,6,2,3,5,4,6,1,3,5),w=c(1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1))
dijkstra(wiki_graph,1)
dijkstra(wiki_graph,3)
```

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euclid.dijkstras

*euclid.dijkstras*

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## Description

A package for two functions: one to compute the greatest common divisor of two numbers using Euclid's algorithm, another to compute the shortest distance between vertices in a graph using Dijkstra's algorithm

## Details

The two functions in the package are: **euclidean** and **dijkstra**

## More details available here

[euclidean dijkstra](#)

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`euclidean`*Get GCD of two numbers*

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**Description**

Implements Euclid's algorithm to compute the greatest common divisor of two numbers

**Usage**

```
euclidean(x, y)
```

**Arguments**

<code>x</code>	A number
<code>y</code>	A number

**Value**

Greatest common divisor of `x` and `y`.

**References**

[Euclidean Algorithm](#)

**Examples**

```
euclidean(123612, 13892347912)
euclidean(100, 1000)
```

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`wiki_graph`*Internodal distances in a graph*

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**Description**

Each row in the dataset pertains to a pair of adjacent nodes in a particular graph (see Details). Each such pair consists of a "starting node" and the "adjacent node". The distance between each such pair is be specified by the dataset.

**Usage**

```
wiki_graph
```

**Format**

A data frame with 18 rows and 3 variables:

**v1** names of starting nodes

**v2** names of corresponding adjacent nodes

**w** the distances between pairs of starting and adjacent nodes

**Details**

A dataset pertaining to the graph on Wikipedia's Dijkstra's algorithm page (as on Tue 8 Sep 2020)

**Source**

[https://en.wikipedia.org/wiki/Dijkstra%27s\\_algorithm](https://en.wikipedia.org/wiki/Dijkstra%27s_algorithm)

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